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Facts vs. Fake:

A Comparison of Meat Product's Nutritional Values and Nutritional Claims

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Facts vs. Fake: A Comparison of Meat Product's Nutritional Values and Nutritional Claims

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Background

- Red meat (RM) production has a negative effect on the environment¹
- Meat (over-) consumption is associated with adverse health, especially due to the high contents of saturated fat and salt²
- Besides nutritional values, food additives play a crucial role for the perceived risk of consumption and naturalness of (meat) products³
- Producers reacted with
 - reformulations of traditional meat products and the development of meat substitutes (MS)
 - excessive use of Front of package (FOP) claims that refer to product's healthiness & naturalness which has been shown to influence consumers' decisions⁴
- Little is known i) about actual differences in nutritional values and usage of food additives between MS and RM, and ii) whether **both** are related to FOP (health) claims

Research Objectives

Investigate at the example of Germany whether:

- the nutritional quality and the use of additives differs between RM, Poultry Meat (PM) and MS innovations
- FOP information is a reliable external cue for predicting a satisfactory nutrient profile and the naturalness of the meat products

Data

- Data from Mintel's Global New Product Database⁵
- 5,482 product innovations in the German meat market from 2010 to 2018
- 65.7% RM innovations, 20.8% PM innovations and 13.5% MS innovation



Example of minus claims on a meat substitute.
Source: <https://www.beyondmeat.com/> Press Images.

Variables and Method

Dependent variables (DV)

- Ofcom's A-score: aggregated score for product's nutritional quality including energy, salt, saturated fat and sugar content. Range from 0 (best) to 40 (worst)
- Count variable for the number of different food additives in a product

Explanatory variables

- Dummies for RM and PM innovations
- Dummies for FOP claims/labels: minus, plus or natural
- Control variables: Price and time trend (0 to 8)

OLS and negative binomial regressions (NBREG)

Regression Results

	OLS DV: A-score				NBREG DV: #Additives			
	(All)	(RM)	(PM)	(MS)	(All)	(RM)	(PM)	(MS)
Red meat	6.713*** -0.201				1.251*** -0.056			
Poultry meat	1.272*** -0.223				1.021 -0.053			
Minus	-2.641*** -0.255	-4.001*** -0.255	-0.035 -0.333	-1.265*** -0.472	1.195*** -0.047	1.086* -0.05	1.334*** -0.1	1.301* -0.186
Plus	0.357 -0.335	1.788** -0.726	0.739 -2.438	-0.896** -0.351	1.154* -0.093	1.398*** -0.156	1.045 -0.468	0.917 -0.107
Natural	0.164 -0.177	0.967*** -0.252	-1.078*** -0.321	-1.062*** -0.299	0.780*** -0.022	0.913*** -0.028	0.750*** -0.055	0.403*** -0.03
Time	-0.256*** -0.039	-0.221*** -0.05	-0.296*** -0.066	-0.196** -0.085	0.969*** -0.005	0.977*** -0.006	0.959*** -0.013	0.942** -0.022
Price: €/100g	0.241*** -0.076	0 -0.086	1.233*** -0.202	1.582*** -0.27	0.981* -0.011	0.932*** -0.013	1.315*** -0.069	1.319*** -0.085
Constant	10.951*** -0.304	17.761*** -0.302	11.553*** -0.435	9.474*** -0.653	2.364*** -0.13	2.985*** -0.105	1.841*** -0.178	2.625*** -0.429
Observations	5,482	3,601	1,141	740	5,482	3,601	1,141	740
Adjusted-R ²	0.21	0.028	0.0645	0.0782				
F-Value/Wald	278.6	33.67	14.4	11.23	248.5	79.25	79.22	178

Discussion

- While previous literature presents ambiguous findings on differences in nutritional quality, our results indicate that, based on the A-score, RM and PM contain higher amounts of unfavorable nutrients than MS⁶
- Also regarding additives, MS are better than their reputation. In fact, MS contain less additives than RM. No significant difference exists compared to PM
- Across product categories, minus claims are related to lower A-scores but associated with more food additives
- While consumers would presume natural labelled products as healthier, looking at the Ofcom A-score this only holds in the case of PM and MS, but not for RM. Natural claims/labels are, however, a consistent indicator for fewer additives

Conclusion

- Our results indicate that FOP claims/labels are in many cases not a reliable cue for communicating the nutritional quality and the naturalness of the product.
- However, the kind of meat is: MS seem the better choice from the perspective of the nutritional quality and the naturalness. RM in contrast are most critical from both perspectives while PM take a middle ground.

Descriptive statistics

VARIABLES	Mean	Mean RM	Mean PM	Mean MS
A-Score	14.457	16.53	10.95	9.786
#Additives	2.18	2.36	1.90	1.75
Natural	0.286	0.20	0.29	0.68
Plus	0.03	0.01	0.01	0.18
Minus	0.072	0.07	0.07	0.10